Drug treatment of hypertension in the elderly: a meta-analysis

Authors' objectives
To determine the effect of antihypertensive drug treatment on mortality and morbidity in the elderly. To evaluate the effects of disease severity and the age of the trial populations on mortality and morbidity to determine whether treatment should be applied to all elderly subgroups.

Searching
MEDLINE was searched from 1980 to February 1992 using the keywords 'hypertension', 'elderly' or 'aged' and 'randomized controlled trials'. Additional searches were made on pertinent review articles, Current Contents (Clinical Medicine) and the references of retrieved articles.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) of any anti-hypertensive drug treatments administered in any form in which hypertension is defined as diastolic (>89 mm Hg), systolic (>159 mm Hg) or isolated systolic (>159 mm Hg) systolic (<90 mm Hg diastolic).

Specific interventions included in the review
Antihypertensive drug treatment.

Participants included in the review
Men and women with a minimum age of 60 years and with hypertension defined as diastolic (>89 mm Hg), systolic (>159 mm Hg) or isolated systolic (>159 mm Hg systolic/ <90 mm Hg diastolic) on at least one measurement.

Outcomes assessed in the review
Mortality and morbidity

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the authors performed the selection.

Assessment of study quality
The authors do not report a method for assessing validity. Two readers who were blinded to treatment assignment graded each trial according to a quality-grading system (Chalmers et al. A method for assessing the quality of a randomised controlled trial. Control Clin Trials 1981,2:31-49). The final result was reached by consensus.

Data extraction
Two readers were used.

Methods of synthesis
How were the studies combined?
The Yusuf-Peto (fixed-effect) method was used to obtain a combined estimate of the odds ratio; there was little difference in comparison with use of the random-effects method.

How were differences between studies investigated?
Approximate chi-squared tests for statistical heterogeneity were used. Multivariate analysis of confounding independent
variables of all ranked trials was undertaken. A sensitivity analysis was carried out with and without the Systolic Hypertension in Elderly People Trial. Patients were ranked according to severity of illness using the criteria: health care setting from which patients were recruited, and the amount of end-organ damage at study entry.

**Results of the review**

Nine RCTs were included (22 were excluded for not meeting the inclusion criteria).

Overall mortality was 12% lower in treated patients (odds ratio 0.88, 95% CI: 0.80 to 0.97, 953 events compared with 1069 events). Treated patients had 36% fewer fatal strokes (odds ratio 0.64 CI: 0.49 to 0.82, 94 events compared with 149 events). Fatal coronary events in the treated group were 25% lower (odds ratio 0.75 CI: 0.64 to 0.88, 263 events compared with 350 events). Non-fatal strokes were 35% lower in the treated patients (odds ratio 0.65 CI: 0.55 to 0.76, 247 events compared with 382 events). Coronary morbidity was 15% lower in the treated patients (odds ratio 0.85 CI: 0.73 to 0.99, 325 events compared with 379 events). Increasing age reduced (but not significantly) the benefit of treatment on total mortality.

**Authors' conclusions**

Treating hypertension in the elderly produces a significant benefit in relation to total mortality and stroke and coronary heart disease. In the oldest patients, and the most severely ill and frail patients (particularly those in long-term care settings), treatment may be less beneficial or even harmful. Further RCTs of drug treatment of hypertension in frail older patients are needed before firm recommendations can be made for this group.

**CRD commentary**

This review includes informative tables which allow re-analysis of data. The meta-analysis is based upon subgroup analysis of data from only trials which reported results separately for older patients. It is not clear to what extent this may introduce bias with and between studies.

**Implications of the review for practice and research**

The effect size estimates found in this review suggest that drug treatment for older people with hypertension could provide a considerable benefit to public health.

**Bibliographic details**


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**Other publications of related interest**

Ebrahim S, Davey-Smith G. Effectiveness of health promotion interventions to prevent stroke and coronary artery disease in elderly people. Effective Health Promotion (in press) The NHS Centre for Reviews and Dissemination, University of York.

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